

Work Order ID 75645

75645

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October-27-11 11:43:29 AM

Item ID: D6002-115 Accept ***N9000040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Crosstube Material
 Start Date: 27/10/2011 Start Qty: 20.00 ***20*** Cust Item ID:
 Required Date: 29/11/2013 Req'd Qty: 20.00 ***20*** Customer:
 Reference:

Approvals: Process Plan: M.L.J Date: 11/10/27 Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D6002	Rev A								

100 PURCHASING 0.00

100

Purchasing

Purchasing

Memo

0.00

Issue P/O 15351 a) Extrude as per Dwg D6002b) Material: 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9or QQ-A-200/11) seamless aluminum tube(c)Minimum ultimate tensile strength = 77 ksid)Minimum tensile yield strenght=66 ksie)Material certification

CZ 11/11/03 20

110

Receive & Inspect for Damage & Mat'l Certs 0.00

110

Packaging

Packaging

Memo

0.00

Ensure material certification is attached

11/17/25 24

120

QC6- Inspect dimensions to drawing 0.00

120

QC

Quality Control

Memo

0.00

Ensure Material certification comply to Dwg D6002

DAS
16
9-89 13/07/26
SQE Attached inspection
Report

824

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 75645***75645***

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October-27-11 11:43:29 AM

Item ID: D6002-115 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Crosstube Material
Start Date: 27/10/2011 Start Qty: 20.00 ***20*** Cust Item ID:
Required Date: 29/11/2013 Req'd Qty: 20.00 ***20*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

130	Chemical Conversion Coat per QSI005 4.1	0.00							
130									
HandFinish	Memo	0.00							
Hand Finishing									

140	Identify as per dwg & Stock Location: <u>LG</u>	0.00							
140									
Packaging	Memo	0.00							
Packaging									

150	QC21- Final Inspection - Work Order Release	0.00							
150									
QC	Memo	0.00							
Quality Control									

13/7/29 *[Signature]*
MLJ 13-07-26

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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October-27-11 11:43:34 AM

Work Order ID: 75645

75645

Parent Item: D6002-115

D6002-115

Parent Item Name: Crosstube Material

Start Date: 27/10/2011

Required Date: 29/11/2013

Start Qty: 20.00

Required Qty: 20.00

Comments: IPP Rev:B 00.12.15 Added: Issue P/O EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6002-115P		Purchased	No			110	Each	0.0000	1	20			
D6002-115P									**				
Crosstube material													

43/1/25 (24)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



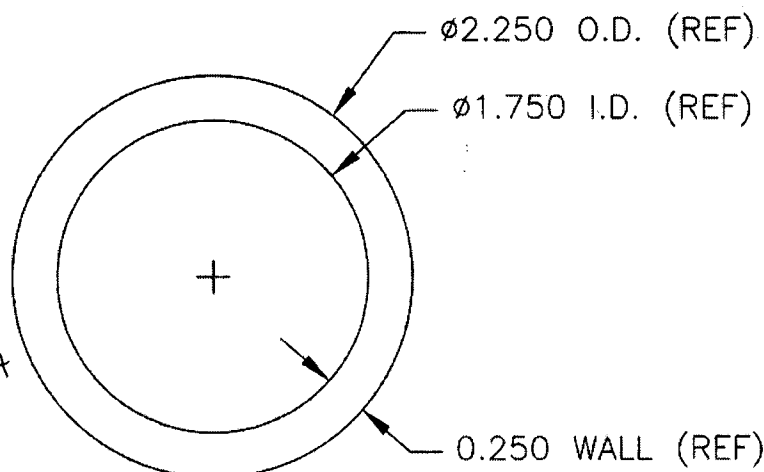
DESIGN <i>CP</i>	DRAWN BY <i>CP</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>A</i>	APPROVED <i>A</i>	DRAWING NO. D6002	REV. A SHEET 1 OF 1
DATE 00.11.22		TITLE CROSSTUBE MATERIAL	SCALE 1:1
A	00.11.22	NEW ISSUE	

SPECIFICATION CONTROL DRAWING

RELEASED
00.11.24 *CP*

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER

NO. 75645 M.L.J
11/10/27



NOTES

- 1) D6002-XXX CROSSTUBE
LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 115" LONG TUBE: D6002-115

- 2) MATERIAL: 2.250 OD x 0.250 WALL 7075-T6/T6511 (WW-T-700/7 OR QQ-A-225/9 OR QQ-A-200/11) SEAMLESS ALUMINUM TUBE.
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi
MINIMUM YIELD TENSILE STRENGTH = 66 ksi
- 3) TOLERANCES ARE PER ASTM B210 AS FOLLOWS:
O.D.: ± 0.006 MEAN (± 0.012 INCLUDING OVALITY)
WALL: ± 0.008 MEAN (± 0.025 INCLUDING ECCENTRICITY)
LENGTH: XXX $+0.125/-0.000$
STRAIGHTNESS: 0.010" DEVIATION / 12" LENGTH
- 4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



kinglist ALUnna AG

ref.no.	44994/300
mer.P.O.	P.O.15351
	07.03.13

Boxmarking:

Dart Aerospace P.O.15351
D6002-115 Canada
Made in Germany Dest.Hawkesbury ONT

reby declare that the wooden packing material are totally free from bark and apparently

om live plant pests

no.	Box no.	OD (inch)	ID (inch)	Wall (inch)	Net Weight (lbs)	Tare lbs	Gross Weight	Pieces	lengths (ft)	Lengths (inch)	Width (inch)	height (inch)	Cast. / Heat No. Top	Pcs.	Sack Middle	Pcs.	Bottom	Pcs.
0	1	2,250	1,750	0,250	448	231	679	24	10	151,575	22,441	22,441			9399/1401680	24		
					448	231	679	24	1,251 m³									

Abnahmeprüfzeugnis 3.1 - DIN EN 10204:2005

Inspection Certificate 3.1 - DIN EN 10204:2005 / Certificat de Reception 3.1- DIN EN 10204:2005

Kunde:
Client:

Dart Aerospace Ltd.
1270 Aberdeen Street
K6A1K7 Hawkesbury, ON Canada

Zeugnisnummer: 910/13
Cert No.: / No. du certificat:

Bestellnummer: PO 15351
Order No. / No. de commande

Auftrag: 44994/300
Our Reference/Notre Reference:

Produkt:

Product / Produit:

Spezifikation:

Specification:

Werkstoff:

Alloy/Alliage:

Abmessung

Size / Dimension

Kennzeichnung

Marking/Marquage:

Rohre nahtlos gepresst
Tubes seamless extruded
AMS - QQ - A - 200/11; Spezifikation Dart Aerospace D6001

Zustand:
Temper/Etat

7075

2,250 INCH x 1,750 INCH x 0,250 INCH x 115,000 INCH
D6002-115 2.250 X 0.250 X 115

ALUnna-Cert No.910/13-7075-T6511-Cast No.9399-AMS-QQ-A-200/11-2,250" OD X 0.250"Wall-Heat Lot No.1401680-ALUnna Order
Conf No.44994/300-1-P.O.15351

Lieferung

Delivered Material / Matériel délivré:

pcs.

lbs

Country of Manufacture: Germany

24

448

Products are in accordance with applicable RoHS

Other elements
each max. 0,05 %, total 0,15 %

1. Chemische Analyse

Chemical Analysis / analyse chimique

Charge/ min.
Cast No. max.

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Zr	Bi	Sn	Ni
			1,2		2,1	0,18	5,1						
	0,40	0,50	2,0	0,30	2,9	0,28	6,1	0,20					
9399/13	0,104	0,178	1,572	0,062	2,506	0,207	5,750	0,036	0,003	0,0193	0,0001	0,0015	0,0002

Hydrogen content: 0,10

ccm/100 g Al Elements without indication < 0,01 %

country of melt manufacturer: Germany

2. Mechanische Eigenschaften

Mechanical Properties / Valeurs Mécaniques

Anforderungen Requirements	tensile (Rm) ksi	yield (Rp0,2) ksi	elongation 2" %	elongation A %	Hardness HB	Heat Lot No.
min. max.	77,0	66,0	7,0			
	80,620	71,920	10,0			1401680

RMS: outside 25 - max. 8,0 µ"

**Ergebnis der
Prüfungen:**

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

Test results:

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order

Resultats:

Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande

		SIDE A		SIDE B							ULTRA SONIC MEASURMENTS				
TUBE #	TOTAL LENGTH	DIA		DIA		INSIDE DIA	wall thickness measured w/vern		Strightness at 12" in middle	Rockwell Reading	LOCATION on tube	R1	R2	R3	R4
		R1	R2	R1	R2										
DWG	115"	2.250"				1.750"	0.250"		0.0100"	N/A	Middle	N/A			
1	115"	2.243"	2.241"	2.250"	2.249"	1.739"	0.254"	0.249"	0.0020"	N/A	Middle	0.262"	0.268"	0.252"	0.247"
2	115"	2.251"	2.247"	2.246"	2.244"	1.737"	0.253"	0.247"	0.0035"	N/A	Middle	0.249"	0.251"	0.261"	0.262"
3	115"	2.253"	2.25"	2.252"	2.251"	1.740"	0.257"	0.254"	0.0020"	N/A	Middle	0.262"	0.264"	0.257"	0.253"
4	115"	2.245"	2.243"	2.245"	2.243"	1.736"	0.255"	0.247"	0.0020"	N/A	Middle	0.26"	0.259"	0.252"	0.254"
5	115"	2.245"	2.243"	2.249"	2.247"	1.740"	0.256"	0.241"	0.0020"	N/A	Middle	0.262"	0.256"	0.252"	0.256"
6	115"	2.252"	2.250"	2.25"	2.254"	1.742"	0.259"	0.249"	0.0020"	N/A	Middle	0.252"	0.252"	0.262"	0.263"
7	115"	2.25"	2.245"	2.247"	2.245"	1.742"	0.256"	0.242"	0.0030"	N/A	Middle	0.256"	0.254"	0.254"	0.257"
8	115"	2.252"	2.248"	2.253"	2.249"	1.74"	0.262"	0.253"	0.0015"	N/A	Middle	0.262"	0.255"	0.253"	0.259"
9	115"	2.245"	2.241"	2.248"	2.245"	1.735"	0.253"	0.250"	0.0040"	N/A	Middle	0.256"	0.256"	0.258"	0.257"
10	115"	2.245"	2.242"	2.248"	2.246"	1.738"	0.249"	0.247"	0.0015"	N/A	Middle	0.252"	0.252"	0.256"	0.256"
11	"	"	"	"	"	"	"	"	"	N/A	Middle	"	"	"	"
12	"	"	"	"	"	"	"	"	"	N/A	Middle	"	"	"	"
13	"	"	"	"	"	"	"	"	"	N/A	Middle	"	"	"	"
14	"	"	"	"	"	"	"	"	"	N/A	Middle	"	"	"	"
15	"	"	"	"	"	"	"	"	"	N/A	Middle	"	"	"	"
16	"	"	"	"	"	"	"	"	"	N/A	Middle	"	"	"	"
PART # D6002-115		P/O# 15351				BATCH # B75645				Notes:					

end measurement with vern										center measurement with ultra sonic									
Mean OUTSIDE DIA. Permissible ± 0.015										Mean OUTSIDE DIA. Permissible ± 0.015									
Tube	Actual A	Actual B	Mean	Nominal	Tolerance	min	max	min	max	Tube	highest	lowest	Mean	Nominal	Tolerance	min	max	min	max
1	0.254	0.249	0.252	0.250	0.015	0.235	0.265	0.0165	-0.014	1	0.268	0.247	0.258	0.250	0.015	0.235	0.265	0.0225	-0.008
2	0.253	0.247	0.250	0.250	0.015	0.235	0.265	0.015	-0.015	2	0.262	0.249	0.256	0.250	0.015	0.235	0.265	0.0205	-0.010
3	0.257	0.254	0.256	0.250	0.015	0.235	0.265	0.0205	-0.010	3	0.264	0.253	0.259	0.250	0.015	0.235	0.265	0.0235	-0.007
4	0.255	0.247	0.251	0.250	0.015	0.235	0.265	0.016	-0.014	4	0.260	0.252	0.256	0.250	0.015	0.235	0.265	0.021	-0.009
5	0.256	0.241	0.249	0.250	0.015	0.235	0.265	0.0135	-0.017	5	0.262	0.252	0.257	0.250	0.015	0.235	0.265	0.022	-0.008
6	0.259	0.249	0.254	0.250	0.015	0.235	0.265	0.019	-0.011	6	0.263	0.252	0.258	0.250	0.015	0.235	0.265	0.0225	-0.008
7	0.256	0.242	0.249	0.250	0.015	0.235	0.265	0.014	-0.016	7	0.257	0.254	0.256	0.250	0.015	0.235	0.265	0.0205	-0.010
8	0.262	0.253	0.258	0.250	0.015	0.235	0.265	0.0225	-0.008	8	0.262	0.253	0.258	0.250	0.015	0.235	0.265	0.0225	-0.008
9	0.253	0.250	0.252	0.250	0.015	0.235	0.265	0.0165	-0.014	9	0.258	0.256	0.257	0.250	0.015	0.235	0.265	0.022	-0.008
10	0.249	0.247	0.248	0.250	0.015	0.235	0.265	0.013	-0.017	10	0.256	0.252	0.254	0.250	0.015	0.235	0.265	0.019	-0.011
11	0.000	0.000	0.000	0.250	0.015	0.235	0.265	-0.235	-0.265	11	0.000	0.000	0.000	0.250	0.015	0.235	0.265	-0.235	-0.265
12	0.000	0.000	0.000	0.250	0.015	0.235	0.265	-0.235	-0.265	12	0.000	0.000	0.000	0.250	0.015	0.235	0.265	-0.235	-0.265
13	0.000	0.000	0.000	0.250	0.015	0.235	0.265	-0.235	-0.265	13	0.000	0.000	0.000	0.250	0.015	0.235	0.265	-0.235	-0.265
14	0.000	0.000	0.000	0.250	0.015	0.235	0.265	-0.235	-0.265	14	0.000	0.000	0.000	0.250	0.015	0.235	0.265	-0.235	-0.265
15	0.000	0.000	0.000	0.250	0.015	0.235	0.265	-0.235	-0.265	15	0.000	0.000	0.000	0.250	0.015	0.235	0.265	-0.235	-0.265

OUTSIDE DIA. Permissible ± 0.038								
Tube	Actual A	Actual B	Nominal	Tolerance	min	max	min	max
1	0.254	0.249	0.250	0.038	0.212	0.288	0.042	-0.039
2	0.253	0.247	0.250	0.038	0.212	0.288	0.041	-0.041
3	0.257	0.254	0.250	0.038	0.212	0.288	0.045	-0.034
4	0.255	0.247	0.250	0.038	0.212	0.288	0.043	-0.041
5	0.256	0.241	0.250	0.038	0.212	0.288	0.044	-0.047
6	0.259	0.249	0.250	0.038	0.212	0.288	0.047	-0.039
7	0.256	0.242	0.250	0.038	0.212	0.288	0.044	-0.046
8	0.262	0.253	0.250	0.038	0.212	0.288	0.050	-0.035
9	0.253	0.250	0.250	0.038	0.212	0.288	0.041	-0.038
10	0.249	0.247	0.250	0.038	0.212	0.288	0.037	-0.041
11	0.000	0.000	0.250	0.038	0.212	0.288	-0.212	-0.288
12	0.000	0.000	0.250	0.038	0.212	0.288	-0.212	-0.288
13	0.000	0.000	0.250	0.038	0.212	0.288	-0.212	-0.288
14	0.000	0.000	0.250	0.038	0.212	0.288	-0.212	-0.288
15	0.000	0.000	0.250	0.038	0.212	0.288	-0.212	-0.288

OUTSIDE DIA. Permissible ± 0.038								
Tube	highest	lowest	Nominal	Tolerance	min	max	min	max
1	0.268	0.247	0.250	0.038	0.212	0.288	0.056	-0.041
2	0.262	0.249	0.250	0.038	0.212	0.288	0.050	-0.039
3	0.264	0.253	0.250	0.038	0.212	0.288	0.052	-0.035
4	0.260	0.252	0.250	0.038	0.212	0.288	0.048	-0.036
5	0.262	0.252	0.250	0.038	0.212	0.288	0.050	-0.036
6	0.263	0.252	0.250	0.038	0.212	0.288	0.051	-0.036
7	0.257	0.254	0.250	0.038	0.212	0.288	0.045	-0.034
8	0.262	0.253	0.250	0.038	0.212	0.288	0.050	-0.035
9	0.258	0.256	0.250	0.038	0.212	0.288	0.046	-0.032
10	0.256	0.252	0.250	0.038	0.212	0.288	0.044	-0.036
11	0.000	0.000	0.250	0.038	0.212	0.288	-0.212	-0.288
12	0.000	0.000	0.250	0.038	0.212	0.288	-0.212	-0.288
13	0.000	0.000	0.250	0.038	0.212	0.288	-0.212	-0.288
14	0.000	0.000	0.250	0.038	0.212	0.288	-0.212	-0.288
15	0.000	0.000	0.250	0.038	0.212	0.288	-0.212	-0.288

MEAN OUTSIDE DIAMETER PERMISSIBLE ± 0.006 side A									
Tube #	Actual A	Actual B	Mean	Nominal	Tolerance	min allowable dimension	max allowable dimension	Results for min allowable	Results for max allowable
1*	2.243	2.241	2.242	2.25	0.006	2.244	2.256	-0.002	-0.014
2	2.251	2.247	2.249	2.25	0.006	2.244	2.256	0.005	-0.007
3	2.253	2.250	2.252	2.25	0.006	2.244	2.256	0.007	-0.004
4	2.245	2.243	2.244	2.25	0.006	2.244	2.256	0.000	-0.012
5	2.245	2.243	2.244	2.25	0.006	2.244	2.256	0.000	-0.012
6	2.252	2.250	2.251	2.25	0.006	2.244	2.256	0.007	-0.005
7	2.250	2.245	2.248	2.25	0.006	2.244	2.256	0.003	-0.008
8	2.252	2.248	2.250	2.25	0.006	2.244	2.256	0.006	-0.006
9	2.245	2.241	2.243	2.25	0.006	2.244	2.256	-0.001	-0.013
10	2.245	2.242	2.244	2.25	0.006	2.244	2.256	-0.001	-0.012
11	0.000	0.000	0.000	2.25	0.006	2.244	2.256	-2.244	-2.256
12	0.000	0.000	0.000	2.25	0.006	2.244	2.256	-2.244	-2.256
13	0.000	0.000	0.000	2.25	0.006	2.244	2.256	-2.244	-2.256
14	0.000	0.000	0.000	2.25	0.006	2.244	2.256	-2.244	-2.256
15	0.000	0.000	0.000	2.25	0.006	2.244	2.256	-2.244	-2.256
16	0.000	0.000	0.000	2.25	0.006	2.244	2.256	-2.244	-2.256

MEAN OUTSIDE DIAMETER PERMISSIBLE ± 0.006 Side B									
Tube #	Actual A	Actual B	Mean	Nominal	Tolerance	min allowable dimension	max allowable dimension	Results for min allowable	Results for max allowable
1	2.250	2.249	2.250	2.25	0.006	2.244	2.256	0.006	-0.006
2	2.246	2.244	2.245	2.25	0.006	2.244	2.256	0.001	-0.011
3	2.252	2.251	2.252	2.25	0.006	2.244	2.256	0.007	-0.004
4	2.245	2.243	2.244	2.25	0.006	2.244	2.256	0.000	-0.012
5	2.249	2.247	2.248	2.25	0.006	2.244	2.256	0.004	-0.008
6	2.250	2.254	2.252	2.25	0.006	2.244	2.256	0.008	-0.004
7	2.247	2.245	2.246	2.25	0.006	2.244	2.256	0.002	-0.010
8	2.253	2.249	2.251	2.25	0.006	2.244	2.256	0.007	-0.005
9	2.248	2.245	2.247	2.25	0.006	2.244	2.256	0.002	-0.009
10	2.248	2.246	2.247	2.25	0.006	2.244	2.256	0.003	-0.009
11	0.000	0.000	0.000	2.25	0.006	2.244	2.256	-2.244	-2.256
12	0.000	0.000	0.000	2.25	0.006	2.244	2.256	-2.244	-2.256
13	0.000	0.000	0.000	2.25	0.006	2.244	2.256	-2.244	-2.256
14	0.000	0.000	0.000	2.25	0.006	2.244	2.256	-2.244	-2.256
15	0.000	0.000	0.000	2.25	0.006	2.244	2.256	-2.244	-2.256
16	0.000	0.000	0.000	2.25	0.006	2.244	2.256	-2.244	-2.256

OUTSIDE DIA. Permissible (with Ovality) ± 0.012 side A							
Tube #	Actual A	Nominal	Tolerance	min allowable dimension	max allowable dimension	Results for min allowable	Results for max allowable
1	2.243	2.250	0.012	2.238	2.262	0.005	-0.019
2	2.251	2.250	0.012	2.238	2.262	0.013	-0.011
3	2.253	2.250	0.012	2.238	2.262	0.015	-0.009
4	2.245	2.250	0.012	2.238	2.262	0.007	-0.017
5	2.245	2.250	0.012	2.238	2.262	0.007	-0.017
6	2.252	2.250	0.012	2.238	2.262	0.014	-0.010
7	2.250	2.250	0.012	2.238	2.262	0.012	-0.012
8	2.252	2.250	0.012	2.238	2.262	0.014	-0.010
9	2.245	2.250	0.012	2.238	2.262	0.007	-0.017
10	2.245	2.250	0.012	2.238	2.262	0.007	-0.017
11	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
12	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
13	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
14	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
15	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
16	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262

OUTSIDE DIA. Permissible (with Ovality) ± 0.012 side b							
Tube #	Actual A	Nominal	Tolerance	min allowable dimension	max allowable dimension	Results for min allowable	Results for max allowable
1	2.250	2.250	0.012	2.238	2.262	0.012	-0.012
2	2.246	2.250	0.012	2.238	2.262	0.008	-0.016
3	2.252	2.250	0.012	2.238	2.262	0.014	-0.010
4	2.245	2.250	0.012	2.238	2.262	0.007	-0.017
5	2.249	2.250	0.012	2.238	2.262	0.011	-0.013
6	2.250	2.250	0.012	2.238	2.262	0.012	-0.012
7	2.247	2.250	0.012	2.238	2.262	0.009	-0.015
8	2.253	2.250	0.012	2.238	2.262	0.015	-0.009
9	2.248	2.250	0.012	2.238	2.262	0.010	-0.014
10	2.248	2.250	0.012	2.238	2.262	0.010	-0.014
11	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
12	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
13	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
14	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
15	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
16	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262

OUTSIDE DIA. Permissible (with Ovality) ± 0.012 side A							
Tube #	Actual B	Nominal	Tolerance	min allowable dimension	max allowable dimension	Results for min allowable	Results for max allowable
1	2.241	2.250	0.012	2.238	2.262	0.003	-0.021
2	2.247	2.250	0.012	2.238	2.262	0.009	-0.015
3	2.250	2.250	0.012	2.238	2.262	0.012	-0.012
4	2.243	2.250	0.012	2.238	2.262	0.005	-0.019
5	2.243	2.250	0.012	2.238	2.262	0.005	-0.019
6	2.250	2.250	0.012	2.238	2.262	0.012	-0.012
7	2.245	2.250	0.012	2.238	2.262	0.007	-0.017
8	2.248	2.250	0.012	2.238	2.262	0.010	-0.014
9	2.241	2.250	0.012	2.238	2.262	0.003	-0.021
10	2.242	2.250	0.012	2.238	2.262	0.004	-0.020
11	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
12	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
13	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
14	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
15	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
16	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262

OUTSIDE DIA. Permissible (with Ovality) ± 0.012 side b							
Tube #	Actual B	Nominal	Tolerance	min allowable dimension	max allowable dimension	Results for min allowable	Results for max allowable
1	2.250	2.250	0.012	2.238	2.262	0.012	-0.012
2	2.246	2.250	0.012	2.238	2.262	0.008	-0.016
3	2.252	2.250	0.012	2.238	2.262	0.014	-0.010
4	2.245	2.250	0.012	2.238	2.262	0.007	-0.017
5	2.249	2.250	0.012	2.238	2.262	0.011	-0.013
6	2.250	2.250	0.012	2.238	2.262	0.012	-0.012
7	2.247	2.250	0.012	2.238	2.262	0.009	-0.015
8	2.253	2.250	0.012	2.238	2.262	0.015	-0.009
9	2.248	2.250	0.012	2.238	2.262	0.010	-0.014
10	2.248	2.250	0.012	2.238	2.262	0.010	-0.014
11	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
12	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
13	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
14	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
15	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262
16	0.000	2.250	0.012	2.238	2.262	-2.238	-2.262